

I CLAIM

1. In a method of fabricating a metal security door having a frame formed with a pair of hollow, upright stile members, upper and lower hollow transverse rail members extending between said stile members, and security bars extending between at least some of said stile and rail members, the improvement comprising spot welding said security bars to said at least some of said stile and rail members.

2. A method according to Claim 1 including a plurality of security bars extending between and into said stile members and a plurality of security bars extending between and into said rail members, and further comprising forming said stile members and said transverse rail members with flat, inwardly directed attachment flanges across which said security bars pass, wherein said security bars reside in contact with and are spot welded to said attachment flanges.

3. A method according to Claim 2 further comprising forming and positioning said attachment flanges to reside in a common plane and spot welding said security bars that extend into and between said stile members to said attachment flanges thereof on one side of said common plane and spot welding said security bars that extend between and into said transverse rail members to said attachment flanges thereof on the opposite side of said common plane.

4. A method according to Claim 2 further comprising first punching security bar receiving openings in at least one flat sheet metal strip and cutting said at least one flat sheet metal strip to form corner securing tabs thereon, roll forming said

5 at least one flat sheet metal strip to form said hollow members at least some of which have pairs of said corner securing tabs projecting therefrom, positioning said hollow members so that said frame has a rectangular configuration forming four corners in which said transverse rail members meet said stile members with a pair of said corner securing tabs at each of said corners, and spot welding said corner securing tabs on said at least some hollow members to other of said hollow members adjacent thereto at each of said corners.

5. A method according to Claim 4 further comprising forming all of said hollow members from a single flat, sheet metal strip.

6. A method according to Claim 5 further comprising initially cutting spot welding tip access apertures in said single, flat, sheet metal strip, thereby creating at least one spot welding tip access aperture in said hollow members at each of said corners, and spot welding said corner securing tabs to said other of said hollow members adjacent thereto by inserting internal spot welding tips into said spot welding tip access apertures so as to contact said corner securing tabs within said hollow members, bringing external spot welding tips into external contact with said hollow members and passing electric currents between said internal and said external spot welding tips to spot weld said hollow members together at each of said corners.

7. A method of fabricating a metal security door comprising:
forming four hollow metal door perimeter segment members so as to define a plurality of security bar receiving openings in each of said perimeter

segment members,

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positioning a plurality of metal security bars to project through said security bar receiving openings and into said hollow perimeter segment members so that said ends of said metal security bars terminate within said perimeter segment members and said perimeter segment members together form a rectangle, and

spot welding said ends of said metal security bars to said perimeter segment members within which they terminate.

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8. A method according to Claim 7 further comprising roll forming said hollow segment members so as to create a security bar attachment flange on each of said hollow segment members, whereby said attachment flanges all project inwardly within said rectangle and lie in a common plane, and whereby said security bar receiving openings in each of said perimeter segment members reside proximate to said security bar attachment flange thereof on one side of said common plane while said security bar receiving openings in each adjacent perimeter segment member lie on the opposite side of said common plane.

9. A method according to Claim 8 further comprising forming said hollow segment members from at least one elongated sheet of metal having opposing longitudinal edges, rolling said edges together and turning one edge over the other to form said security bar attachment flanges.

10. A method according to Claim 9 further comprising forming all of said hollow segment members from a single, elongated sheet of metal.

11. A method according to Claim 7 further comprising forming at least some of said perimeter segment members with corner tabs projecting from their ends and spot welding said corner tabs to other of said perimeter segment members located adjacent thereto.

12. A method according to Claim 11 further comprising cutting electrode access openings in at least some of said perimeter segment members so that there is an electrode access opening at each corner of said rectangle, inserting internal spot welding electrodes into said electrode access openings, pressing external spot welding electrodes against said perimeter segment members to hold said corner tabs in contact with said other of said perimeter segment members located adjacent thereto, and passing electric current between said internal and said external electrodes to spot weld said corner tabs to said other of said perimeter segment members located adjacent thereto at each of said corners of said rectangle.

13. A method of fabricating a security door comprising:

forming a metal door frame to define a pair of hollow stile frame members and upper and lower hollow transverse rail frame members so that each of said frame members has an inner face with an attachment flange projecting therefrom and security bar receiving apertures defined in said inner faces of said frame members,

positioning a plurality of metal security bars relative to said hollow frame members so that the ends of said security bars project through said

security bar receiving apertures and into said hollow frame members and so that said
10 security bars pass over and reside in contact with said attachment flanges, and

spot welding said security bars to said attachment flanges so as
to permanently secure said security bars to said metal door frame.

14. A method according to Claim 13 further comprising roll forming said
metal door frame from a single elongated strip of sheet metal and cutting indentations
into said strip to form mitered corners between adjacent frame members.

15. A method according to Claim 13 further comprising the steps of:

cutting an elongated continuous flat sheet metal strip to form
mutually parallel, longitudinal edges thereon;

cutting mitered corners and pairs of opposing corner tabs in
5 said longitudinal edges of said strip;

rolling said flat sheet metal strip to form a structure having a
hollow cross section;

crimping said longitudinal edges of said strip together between
said mitered corners to form said stile frame members and said transverse rail frame
10 members;

longitudinally bending said rolled sheet metal strip at right
angles between said frame members to bring said stile frame members into
perpendicular alignment relative to said rail frame members and so that said pairs of
corner tabs project alongside surfaces of said frame members adjacent thereto at said

mitered corners; and

spot welding said pairs of corner tabs to said frame members adjacent thereto to thereby secure said stile frame members in perpendicular alignment relative to said upper and lower transverse rail frame members.

16. A method according to Claim 15 further comprising cutting spot welding electrode access openings into said sheet metal strip, inserting internal spot welding electrodes into said electrode access openings prior to spot welding said pairs of corner tabs, and withdrawing said internal electrodes from said electrode access openings after spot welding said pairs of corner tabs.

17. A method according to Claim 16 further comprising sequentially spot welding each of said corner tabs in each of said pairs.

18. A security door comprising:

a mutually parallel pair of hollow, roll-formed sheet metal upright stiles having opposing extremities,

mutually parallel, hollow, roll-formed sheet metal upper and lower transverse rails connected to said extremities of said upright stiles and oriented perpendicular thereto,

security bars extending between and spot welded to said upright stiles, and

security bars extending between and spot welded to said rails.

19. A security door according to Claim 18 wherein said stiles and rails are

formed with security bar receiving apertures therein and security bar attachment flanges thereon and said security bars extend through said security bar receiving apertures and into said stiles and rails and are spot welded to said stiles and rails at said attachment flanges.

20. A security door according to Claim 19 further comprising corner securing tabs extending from selected ones of said stiles and rails and which are spot welded to others of said stiles and rails.